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Value Relevance of the Multi-step Income Statement in Japan

Abstract

This paper investigates the relationship between value relevance of the multi-step income statement and managerial opportunistic behavior. In Japan, net income is disclosed by three steps, i.e., 1) operating profits from core operating activity, 2) ordinary income, measured by adding gains and losses from non-core operating and financing activities to operating profits, and 3) net income that is bottom line performance in the income statement. While Japanese firms achieve income smoothing, loss avoidance and big bath, the managerial opportunistic behavior is simply identified by the observation of multi performance measures. We find that the firms doing income smoothing, loss avoidance and big bath, which are identified by the multi-step income statement, have the different value relevance of earnings from other firms. In many cases, earnings management decreases the value relevance of earnings. The results suggest that the multi-step income statement enables investors to detect earnings management without apparent difficulty and that earnings become more useful when investors use the information contained in it.

Keywords: multi-step income statement, value relevance, earnings management, income smoothing, loss avoidance, big bath

1. Format of income statement

Recently, performance reporting is a hot issue in the international convergence of financial accounting standards. As for performance reporting, not only the reporting format but also the concept of income and the definition of performance are debated. Those are very complicated problems and seem to be difficult to solve immediately. Besides the traditional issues on measurement and recognition, whether the bottom line of the income statement should be net income or comprehensive income and whether performance measure of the bottom line should be the income for shareholders of the parent company or the income of consolidated economic unit are very important issues, too. In addition, whether

performance measure in the income statement should be divided into some components (disclose some subtotals) or not (disclose only single statement) is also a basic issue. This research examines the issue on the format of income statement.

Japanese GAAP requires public companies to disclose the multi-step income statement. In the first step, operating profits form core operating activities is disclosed in the multi-step income statement. . It is measured by deducting operating expenses and administrative expenses from operating revenues. In the second step, gains and losses (including interest expenses) form non-core operating and financing activities are added to (deducted from) operating profits, then ordinary income is disclosed. Since ordinary income does not include non-recurring components, it corresponds to earnings in usual meaning. Ordinary income is regarded as a proxy of normal earnings generating power of the firm in Japan. Finally net income is disclosed on the bottom line of income statement. Net income is measured by adding impermanent items and taxes to ordinary income. The impermanent items are composed of special items, extra-ordinary items, and non-recurring items such as asset write-downs and write-offs, restructuring charges, gains from sales of operating assets and settlement of investment securities, losses form the discontinued business. In sum, Japanese income statement discloses three step measurements of net income and display two subtotals, i.e. operating profits and ordinary income.

The defects of the multi-step income statement, which have been used for a long time in Japan, are repeatedly criticized. It is complained that because this format permits the discretion on the classification of components of net income, managers may manipulate the classification for earnings management. It is well known that the same issue is recently closed up as with “pro-forma” reporting (Bhattacharya et al., 2004). Advocates for single statements persist that the manipulation of classification would be diminished by prohibiting the multi-step statement. However the prohibition of subtotal disclosure would extinguish only the manipulation of classification. The manipulation of earnings allocation across years cannot be extinguished by the reform of disclosure format. On the contrary, if earnings management on allocation, which could be easily detected by noticing operating profits or ordinary income, would not be detected in single statement, the information value of performance reporting for investors would decline.

This paper investigates the value relevance of the multi-step income statement by using

Japanese firms' data. This research examines not only the time-series trend of earnings (net income) but also the relationship between performance measures of each step in the year. We hypothesize that the value relevance of earnings (net income) is affected by managerial opportunistic behavior because the sophisticated investors who find the abnormal behavior of earnings components may discount the performance of the firm. The results show that the firms achieving income smoothing, loss avoidance, and big bath, which are identified by the relationship between multi performance measures, have the different relevance of earnings (net income) from other firms. In many cases, the coefficient (capitalization multiple) on performance measure for firms managing earnings is lower than others. Therefore, earnings management seems to decrease the value relevance of earnings and net income. Our hypothesis is supported. The empirical results in this paper imply that the multi-step income statement enables investors to detect the earnings management and that earnings and net income becomes more useful when investors use the information contained in it.

The remainder of this paper is organized as follows. Section 2 provides a brief review of prior studies related to our research and discusses our hypothesis and empirical model. Sections 3 to 5 pick up the archetypes of earnings management, income smoothing, loss avoidance, big bath, respectively. The last section provides concluding remarks.

2. Prior studies and hypothesis development

Every manager has a certain preference over the earnings stream and behaves for self interest on his or her preference. On the other hand, investors anticipate the future cash flows of the firm based on the past stream of earnings and estimate the value of the firm. Even if two firms have the same stream of earnings, the firm value can be different form each other when the expected cash flows differ. In such a case, the association between earnings and firm value, namely the value relevance of earnings is different. While a firm creates some patterns of earnings allocation across years by earnings management, the sophisticated investors estimate the firm value with care on the allocation process chosen by managers. Therefore, if the trace of manipulating would appear in the relationship between subtotals (or bottom line) in the income statement and in their time-series trends, we could observe the different relevance of ordinary income and net income according to each allocation pattern.

Barth et al. (1999) is a precursor, which examines the effect of earnings momentum on the value relevance. Although they focus on the earrings streams that are the products by earnings management, they do not pay sufficient attention to the methods or means used for earnings management that leave impressions in the income statement. In general, the studies on the discretionary management of accruals by managers and on the value relevance of them investigate only the pattern of earnings allocation. However, some studies so not base on the assumptions on the rational decision making by managers and investors. The research that thoughtlessly regards loan loss privations of banks as a signaling and the research on the IPO firms, which maintain that IPO firms myopically manipulate earnings just before IPO and naïve investors are repeatedly deceived, are typical examples.

On the other hand, Marquardt and Wiedman (2004) is a distinguished research, which has rational assumptions both on managers and investors. They point out that the value relevance of earnings sometimes decreases according to the type of earnings management. Their conclusion is quite reasonable because investors are sufficiently rational. Since the relevance of earnings is determined by the association between earnings and expected future cash flows, earnings management does not always decrease the relevance of earnings. In this research, though we stand on the same point of view as Marquardt and Wiedman (2004a), we do not investigate the incentives of managers nor the decision making process of investors. We investigate only how the difference in the value relevance of earnings can be observed when some firms seem to achieving earnings management, which are identified by the relationship between subtotals and the trends of each performance measure in the multi-step income statement.

In addition to earnings management, our research is also related to accounting literature on accruals quality. Since a seminal paper of Sloan (1996), it is in the spotlight that accruals, less persistent than cash flows, are more highly valued in the capital market than cash flows. Recently, the quality and value relevance of special items are the center of concern in academics. Marquardt and Wiedman (2004b) detect that special items are utilized for earnings management and they insist the possibility that means for earnings management will be different in the contexts. Although special items are transitory, Burgstahler et al. (2002) report that stock price does not fully reflect the information contents for future earnings that special items imply. Similarly, Dechow and Ge (2005) also point out that mis-pricing of

special items is a major source of accruals anomaly. If special items were used for earnings management and investors could only incompletely and uncertainly know the cause and effect of earnings management, then information asymmetry between managers and investors become more serious. Earnings management would make earnings and income much noisier and decrease their value relevance (Francis et al., 2005). Similar to Zhaoyang and Chen (2005), our research investigates the relevance of earnings and income on the assumption that the rational investors differently value earnings components used for earnings management relative to when not used for earnings management.

In the following analysis, first, we choose the earnings management samples (target samples) by noticing 1) the levels of operating profits, ordinary income and net income, 2) the sign of changes in them compared with those of the previous year, and 3) the magnitude of their changes. Second, we investigate the difference in the value relevance of ordinary income and net income between the target samples and others. Since the above mentioned information 1) to 3) is only abstracted from the multi-step income statement, if the value relevance of earnings or net income is different between target samples and others, those results represent the rationality of current statement form in Japan. At the same time, the results will be powerful counter evidence against the proposal of single statement.

The earnings capitalization model is adopted in this paper for examining the value relevance and group dummy (binary) variables are used in OLS estimation for testing the difference in the value relevance among subgroups. The research hypothesis is as follows.

Hypothesis: The value relevance of firms achieving earnings management, which is detected by the multi-step performance information, is different from others. In the meaning that investors can detect those firms, the multi-step income statement is value relevant.

In order to investigate whether the multi-step income statement is value relevant or not, it is sufficient to confirm the significance of the difference in coefficients on performance measure (ordinary income and net income) between target samples and others. The sign of the coefficient is not the main concern. The choice of target samples, which means the identification of earnings management, is mechanically executed using the multi-step performance measure and the incentives of earnings

management is not speculated as described above. Our focus is on the *abnormal* or *unnatural* movement (relations) of multi-step performance measures, while we neglect whether they are intentionally created by managers or not.

Table 1 presents our sample. Manufacturing sector consists of 18 industries; fishery, mining, foods, fiber and textile, paper and pulp, chemicals, pharmaceuticals, rubber and tire, ceramics, steel, metal, machinery, electronics, automobiles, other transportation vehicles, precise products, ship building and other. Data is retrieved from NIKKEI NEEDS CORPORATE FINANCIAL DATA. However, because some data need to be hand collected, we choose the firms listed on top 50 largest sales in each industry in 1999. Therefore, these samples are slightly biased toward the large size of operating volume. However, our sample covers the typical and famous Japanese firms and so we believe that our sample have the representativeness of Japanese manufacturing sector. Fiscal year of our sample ends on March. Non-manufacturing (commercial and service) sector consists of 12 industries; real estate, construction, retail, service, trading and wholesale, marine, land transportation, warehouse, railroads, gas, oil and petroleum, and electricity. All listed firms of March ending fiscal year in non-Manufacturing sector are included in our sample.

All financial data of our sample is that of parent only statements. In Japan, many firms adopted 6 months fiscal year (closed semi-annually) before 1978, so our investigation period starts from 1978 fiscal year which closes on March 1979. In 2000, new accounting standard of the consolidation policy, which adopts the concept of substantial control, was promulgated and the consolidated financial statements become main financial statements since 2000 in Japan. Therefore, our investigation period ends in 1998 fiscal year which closes on March 1999. All data of stock prices is collected form *TOYO-KEIZAI KABUKA CD-ROM*.

In the following sections, we estimate the coefficients by cross-sectional regression and synthesize them in each period by the method in Fama and MacBeth (1973). For cross-sectional estimation, we adopt Huber-White *t* value which uses a heteroskedasticity consistent covariance matrix. We use T, which is a test statistics of Fama-MacBeth method, in the following tables to avoid confusion.

Table 2 summarizes the descriptive statistics of variables used in our analysis, which are yen per share. Our investigation period covers 21 fiscal years, as explained above. While we synthesize the

estimated results over full period, we report the results in sub-periods. The reason for dividing into sub-periods is that the value relevance of earnings depends on the economic environments in each sub-period. We divide the investigation period into three sub-periods; 1) March 1979 – March 1985, 2) March 1986 – March 1992, 3) March 1993 – March 1999. Every sub-period equally contains 7 fiscal years. In Japan, the first period is normal and rather stable. The second period is boom or bubble economy. The third period is under depression. Because of the limitation of space, we do not report the estimated results of the constant term and industry dummies. Year in Tables represents the ending point. For example, 1979 represents the fiscal year that ends on March 1979.

3. Income smoothing

3.1 Identification of income smoothing firms

3.1.1 Identification by the sign of changes in performance

Income smoothing is an activity to alleviate the time-series volatility of performance. Although many studies investigate on income smoothing for a long time, some problems remain unresolved yet and a behavior of income smoothing is still a puzzle in academics. Buckmaster (2001) extensively and exquisitely surveys prior research on income smoothing. Recently, it is widely perceived that the capital cost of income smoothing firm is lower and then income smoothing increases the value of the firm (Mikhail et al., 2004). Moreover, some research provide the empirical results supporting the hypothesis that income smoothing behavior communicates the manager's prospects for future performance to investors in capital market (Srinidhi et al., 2001, Obinata, 2004).

However, it is often alleged that the artificially smoothed income by earnings management is less value relevant than naturally smoothed income. In fact, Bao and Bao (2004) report that stock price for smoothed income firms is higher relative to un-smoothed income firms and that the stock price is higher when the the ratio of cash earnings (accruals) to earnings is higher (lower). Their conclusion is consistent with recent common knowledge that because most accruals revert in the long run, accruals are less persistent than cash earnings. Our research considers the similar point to Bao and Bao (2004).

In general, the target or goal of income smoothing is not observable from outside of firms. What is the target of income smoothing may be just an empirical issue. In empirical research, we can only

presume the hypothetical target. We presume, in this paper, that the target of income smoothing is the level of performance in the previous year. The firms, which seem to alleviate the changes in ordinary income (earnings) or net income, are regarded as income smoothing samples.

Three sets of income smoothing are discriminated though each other is not necessarily exclusive. First, we identify two types of income smoothing; 1) the change in ordinary income is negative while the change in operating profits is positive (income decreasing type), 2) the change in ordinary income is positive while the change in operating profits is negative (income increasing type). These two types are identified on the assumption that the ordinary income is the target. Second, we identify another set of income smoothing based on the behavior of net income; 3) the change in net income is negative while the change in ordinary income is positive (income decreasing type), 4) the change in net income is positive while the change in ordinary income is negative (income increasing type).

In Japan, many people have the impression that firms smooth net income by manipulating special items, especially asset write-offs and asset settlement. So, finally, we identify the third set of income smoothing considering ways and means; 5) the change in net income is negative while the changes in both operating profits and ordinary income are positive (income decreasing type), 6) the change in net income is positive while the changes in both operating profits and ordinary income are negative (income increasing type).

Regression models used in our analysis are as follows:

$$P_{it} = \alpha + \beta_1 OI_{it} + \beta_2 SM_{11} OI_{it} + \beta_3 SM_{12} OI_{it} + \beta_4 SM_{13} OI_{it} + \sum \gamma_j D_j + u_{it} \quad (1)$$

$$P_{it} = \alpha + \beta_1 NI_{it} + \beta_2 SM_{21} NI_{it} + \beta_3 SM_{22} NI_{it} + \beta_4 SM_{23} NI_{it} + \sum \gamma_j D_j + u_{it} \quad (2)$$

$$P_{it} = \alpha + \beta_1 NI_{it} + \beta_2 SM_{31} NI_{it} + \beta_3 SM_{32} NI_{it} + \beta_4 SM_{33} NI_{it} + \sum \gamma_j D_j + u_{it} \quad (3)$$

where ***P*** is stock prices on the end of fiscal year, ***OI*** is ordinary income (per share), ***NI*** is net income (per share), $\boldsymbol{D}_j$s are industry dummies, and u is a error term. For mitigating the effect of heteroskedasticity, stock price, ordinary income, and net income are deflated by stock price of beginning-of-year. ***SM***s are group dummies (binary variables) based on three sets of income smoothing types. The grouping criteria are as follows. In the following explanation, ***OP*** presents operating profits and Δ presents the changes

compared with that of previous year.

Equation (1);

$\boldsymbol{SM}_{11}$ is unity if $\boldsymbol{\Delta OI}$ is negative while $\boldsymbol{\Delta OP}$ is positive, zero otherwise.

$\boldsymbol{SM}_{12}$ is unity if $\boldsymbol{\Delta OI}$ is positive while $\boldsymbol{\Delta OP}$ is negative, zero otherwise.

$\boldsymbol{SM}_{13}$ is unity if both $\boldsymbol{\Delta OP}$ and $\boldsymbol{\Delta OI}$ are negative, zero otherwise.

Equation (2);

$\boldsymbol{SM}_{21}$ is unity if $\boldsymbol{\Delta NI}$ is negative while $\boldsymbol{\Delta OI}$ is positive, zero otherwise.

$\boldsymbol{SM}_{22}$ is unity if $\boldsymbol{\Delta NI}$ is positive while $\boldsymbol{\Delta OI}$ is negative, zero otherwise.

$\boldsymbol{SM}_{23}$ is unity if both $\boldsymbol{\Delta OI}$ and $\boldsymbol{\Delta NI}$ are negative, zero otherwise.

Equation (3);

$\boldsymbol{SM}_{31}$ is unity if $\boldsymbol{\Delta NI}$ is negative while both $\boldsymbol{\Delta OP}$ and $\boldsymbol{\Delta OI}$ are positive, zero otherwise.

$\boldsymbol{SM}_{32}$ is unity if $\boldsymbol{\Delta NI}$ is positive while both $\boldsymbol{\Delta OP}$ and $\boldsymbol{\Delta OI}$ are negative, zero otherwise.

$\boldsymbol{SM}_{33}$ is unity if all of $\boldsymbol{\Delta OP}$, $\boldsymbol{\Delta OI}$, $\boldsymbol{\Delta NI}$ are negative, zero otherwise.

In testing the above explained hypothesis, we examine the significance of coefficients on interaction terms of performance with group dummies as $\boldsymbol{SM}_{k1}$ (income decreasing type) and $\boldsymbol{SM}_{k2}$ (income increasing type). We include $\boldsymbol{SM}_{k3}$ in the regressions to correct the downward bias of negative changes, which affects the estimation of β_1 and influences the estimation of β_2 and β_3.

The firms with dummies $\boldsymbol{SM}_{k1}$ and $\boldsymbol{SM}_{k2}$ have the opposite sign of changes in the different performance measures in the income statement. This pattern implies income smoothing in the meaning that firms mitigate the changes in performance. However, it seems to be an overreaction. It may be careful to notify, in advance, that this type may include creative accounting or conservatism other than income smoothing, too.

3.1.2 Identification by the magnitude of changes in performance

In this sub-section, our focus is on the firm behavior of alleviating large changes for income smoothing. When the change in operating profits is very large, other things being equal, the change affects ordinary income and net income in the same direction. On the contrary, in the case where ordinary

income or net income are not affected by a large change in operating profits, gains and losses form financing or unusual activities should compensate for a large shock in operating performance to smooth ordinary income and net income. In this paper, we name the above median change as a “large” change. We measure, in each year, the industry median of the absolute value of changes deflated by stock prices of begging-of-year ($|\Delta X_t|/P_{t-1}$). The reason for using the industry median in each year is that the magnitude of changes in performance varies year by year and industry by industry and that we cannot correctly know the distribution function of their changes. The firms, which do not experience a large change in lower-step performance while the change in upper-step performance is above the median in the same year, are defined as income smoothing firms. This definition may more faithfully correspond to the usual meaning of income smoothing than that in aforementioned sub-section.

The regression models are as follows:

$$P_{it} = \alpha + \beta_1 OI_{it} + \beta_2 DN_1 OI_{it} + \beta_3 UP_1 OI_{it} + \sum \gamma_j D_j + u_{it} \quad (4)$$

$$P_{it} = \alpha + \beta_1 NI_{it} + \beta_2 DN_2 NI_{it} + \beta_3 UP_2 NI_{it} + \sum \gamma_j D_j + u_{it} \quad (5)$$

where $\boldsymbol{DN}_1$ is unity if, while the *positive* change in operating profits is above the median, the change in ordinary income is less than the median, zero otherwise, and $\boldsymbol{UP}_1$ is unity, in reverse, if the *negative* change in operating profits is above the median while the change in ordinary income is less than the median. In equation (4), ordinary income is regarded as the target of income smoothing. In the similar fashion, dummies in equation (5) are given to the firms that do not experience a large change in net income while the change in ordinary income is above the median. It is presumed that the target of income smoothing is net income in equation (5).

3.2 Results of analysis

Table 3 presents the results of regression. Panel A reports the estimation results of model (1) concerning the sign of changes in operating profits and ordinary income. Coefficients on the interaction term of income decreasing type ($\boldsymbol{SM}_{11}\boldsymbol{OI}$) are significantly negative almost at the 0.05 level (two-tailed) in manufacturing and non-manufacturing sector over every period. Similarly, coefficients on the

interaction term of income increasing type ($\boldsymbol{SM}_{12}\boldsymbol{OI}$) are significantly negative almost at the 0.05 level, except for the third period in manufacturing sector and for the second period in non-manufacturing sector. The results of estimation for regression model (2) concerning the sign of ordinary income and net income are reported in Panel B. We find that coefficients on the interaction term of income decreasing type ($\boldsymbol{SM}_{21}\boldsymbol{NI}$) are significantly negative at the 0.05 level, except for the first period in manufacturing sector and for the first and second periods in non-manufacturing sector. Coefficients on the interaction term of income increasing type ($\boldsymbol{SM}_{22}\boldsymbol{NI}$) are significantly negative at the 0.10 level, except for the second period in non-manufacturing sector.

These results support the scenario that since negative changes contain lots of transitory elements, the strong effect of them spoils the persistence of ordinary income and net income. The results are also consistent with the scenario that information value of performance decreases because the income smoothing behavior as analyzed in Table 3 is noisy for investors,.

However, such an straightforward interpretation cannot be applicable to the results shown in Panel C. Panel C reports the results assuming that special and extra-ordinary items can be means for income smoothing. Over every period in non-manufacturing sector, coefficients on the interaction term of income decreasing type ($\boldsymbol{SM}_{31}\boldsymbol{NI}$) are significantly positive at the 0.05 level. This implies that conservative accounting relieves the influence of transitory elements and increases the persistence of net income. On the other hand, coefficients on the interaction term of income increasing type ($\boldsymbol{SM}_{32}\boldsymbol{OI}$) are significantly negative at the 0.05 level for manufacturing sector over full period. Since the latter result is the same as in Panels A and B, the former result for income decreasing type in non-manufacturing sector seems to be an idiosyncrasy.

As mentioned above, income smoothing examined in Table 3 seems to be a kind of overreaction. It is still unclear what effect such a reaction provides on the persistence of performance and on the estimation of future cash flows. Nevertheless, we find that coefficients on the interaction term between performance and dummies are statistically significant. Therefore, the multi-step income statement is neither redundant nor value irrelevant.

Table 4 reports the results concerning income smoothing of alleviating a large shock. Panel A presents the results in the case that a large shock occurs in core operating profits and it is lessened by

gains and losses form non-core operating and financing activities. Panel B presents the results in the case that a large shock occurs in ordinary income and it is alleviated by gains and losses from asset write-downs, write-offs, and settlements and so on.

In Panel A of Table 4, the coefficients for income decreasing type ($\boldsymbol{DN_1OI}$) are significantly positive almost at the 0.05 level in the third period. This result implies that conservative income smoothing improves the persistence of ordinary income. Contrastively, the coefficients for income increasing type ($\boldsymbol{UP_1OI}$) are significantly negative at the 0.05 level for all periods in manufacturing sector and for the second period in non-manufacturing sector. This result implies that excessive income squeezing increases noise in performance. Similar to the case of ordinary income, the conefficients on the interaction term between net income and the dummy of income decreasing ($\boldsymbol{DN_2NI}$) are significantly positive at the 0.05 level for all periods in manufacturing sector and for the third period in non-manufacturing sector. Contrastively again, the coefficients for income increasing type ($\boldsymbol{UP_2NI}$) are significantly negative almost at the 0.05 level for the first and third periods in manufacturing sector.

It is worthwhile noticing that, in the third period when Japanese economy is under depression, the sign of incremental coefficients on income, smoothed in the conservative direction, is positive. Although income smoothing is sometimes criticized, the results in Table 4 implies the possibility that income smoothing increase the information value of accounting performance measure. Again, we empirically confirm that the multi-step income statement is value relevant and that unnatural or abnormal movement of multi-step performance has information value, which investors could not obtain free without the multi-step income statement.

4. Avoidance of losses

4.1 Identification of loss avoidance

It is alleged that firms have a tendency to avoid reporting losses. Recently, it is important empirical issue what factors motivate firms to avoid losses, how investors react to loss avoidance and how investors value the firm avoiding losses (Burgstahler and Dichev, 1997, Degeorge et al., 1999, Bhattacharya et al., 2003, Glaum et al., 2004, Brown and Caylor, 2005, among others). Some research point out that, in capital market, small amount of negative income (loss) is seriously penalized while

small amount of positive income is not largely rewarded and that such asymmetrical evaluation motivates firms to avoid loss. If so, we expect that firms will squeeze profits or gains to avoid losses when firms face the risk of reporting loss.

For Japanese firms, Shuto (2000) and Suda and Shuto (2004) report that it is goals of management today to 1) avoid loss, 2) avoid negative change in performance, or 3) meet the analysts' forecasts and that firms achieving those goals are more positively evaluated than firms failing. However, our view point is different from those studies. In this paper, we pay special attention to the difference in firm value between the case where firms of lower earnings power avoid loss and report positive income when they face the risk of reporting loss and the case where firms of higher earnings power report positive income without efforts of avoiding loss. It is reasonable to expect that the latter firms will be valued higher than the former.

We investigate three cases; 1) ordinary income is positive while operating profits is negative (income squeeze by gains from non-core operating and financing activities), 2) net income is positive while ordinary income is negative (income squeeze by gains from unusual and extra-ordinary activities; for instance, asset settlement and so on), 3) net income is positive while operating profits is negative (income squeeze by activities other than core operating). The regression models to analyze the cases are as follows.

$$P_{it} = \alpha + \beta_1 OI_{it} + \beta_2 D_{L1} OI_{it} + \beta_3 U_1 OI_{it} + \sum \gamma_j D_j + u_{it} \quad (7)$$

$$P_{it} = \alpha + \beta_1 NI_{it} + \beta_2 D_{L2} NI_{it} + \beta_3 U_2 NI_{it} + \sum \gamma_j D_j + u_{it} \quad (8)$$

$$P_{it} = \alpha + \beta_1 NI_{it} + \beta_2 D_{L3} NI_{it} + \beta_3 U_3 NI_{it} + \sum \gamma_j D_j + u_{it} \quad (9)$$

Equation (7);

$\boldsymbol{D}_{L1}$ is unity if both operating profits and ordinary income are negative, zero otherwise.

$\boldsymbol{U}_1$ is unity if ordinary income is positive while operating profits is negative, zero otherwise.

Equation (8);

$\boldsymbol{D}_{L2}$ is unity if both ordinary income and net income are negative, zero otherwise.

$\boldsymbol{U}_2$ is unity if net income is positive while ordinary income is negative, zero otherwise.

Equation (9);

$\boldsymbol{D}_{L3}$ is unity if both operating profits and net income are negative, zero otherwise.

$\boldsymbol{U}_3$ is unity if net income is positive while operating profits is negative, zero otherwise.

Dummy variables $\boldsymbol{D}_L$ are given to the firms who report losses failing to squeeze income or without squeezing income. On the other hand, dummy variables $\boldsymbol{U}$ are given to the firms who succeed in squeezing income enough to avoid loss.

4.2 Results of analysis

Panel A in Table 5 reports the results in the case that firms avoid negative ordinary income while operating profits is negative. Except for the second period in non-manufacturing sector, the *incremental* coefficients on negative ordinary income ($\boldsymbol{D}_{L1}\boldsymbol{OI}$) are significantly negative at the 0.05 level, as consistent with common knowledge that losses generally contain much noise. The incremental coefficients on positive ordinary income for firms avoiding loss ($\boldsymbol{U}_1\boldsymbol{OI}$) are significantly negative at the 0.10 level for the third period in manufacturing sector and for the second period in non-manufacturing sector. Panel B, which report the results in the case that firms avoid negative net income while ordinary income is negative, shows the similar output to Panel A. The incremental coefficient on positive net income for firms avoiding loss ($\boldsymbol{U}_2\boldsymbol{OI}$) is significantly negative at the 0.10 level for the third period in manufacturing sector. And also in Panel C, which report the results in the case that firms avoid negative net income while ordinary profits is negative, the incremental coefficients on positive net income for firms avoiding loss is ($\boldsymbol{U}_2\boldsymbol{OI}$) are significantly negative at the 0.10 level for the second and third periods in manufacturing sector.

The results for the third period, when Japanese economy is under depression, is worthy of remark. The results in Table 5 imply that loss avoidance decreases the persistence of ordinary income and net income in manufacturing sector. The results are consistent with a few interpretations though they are not exclusive each other; for instance, 1) firms bear unnecessary costs for avoiding loss, 2) loss avoidance decreases cash flows of the firm in the future, 3) since investors can only uncertainly know the reason of loss avoidance, noise in performance becomes larger. If loss avoidance investigated here was a nominal

manipulation of allocation of cash flows across years, the boosted income should not have the relationship with the firm value and the sophisticated investors should not value the nominal increment of performance. The multi-step income statement enables investors to behave in such a rational manner.

5. Big bath accounting

5.1 Identification of big bath accounting

Reporting a large loss at a burst, though its necessity is unclear, is called big bath accounting. Such a non-linear evaluation as a large loss is not so seriously penalized as compared with a small loss and a certain managerial compensation scheme that is asymmetry between positive income and losses are assumed to motivate firms to take a big bath. The big bath accounting is not necessarily *opposite* but closely *related* to loss avoidance. While firms avoid a small loss, firms take a big bath by front-loading future expenses when they face the risk of reporting loss that is too large to avoid (Bauman, et al. 2001, Kirschenheiter and Melumad, 2002).

Traditionally, it is alleged that firms discretionally amortize or write off the assets for big bath accounting (Elliot et al., 1988, Walsh et al., 1991). Peek (2004) examining firms in Netherlands reports that provisions for operating expenses are used as the means of big bath accounting. Although accounting standards for asset impairment is expected to function as a brake on big bath accounting, Riedl (2004) reports that, as contrary to the expectation, management opportunistically account for impairment because operation rules of *SFAS No. 121* is ambiguous and it permits the discretion of management. The usefulness of loss information by big bath accounting has been mainly investigated using the cases of amortization and revaluation of assets. A distinguished review article Suda (2001) digests the evidence of prior studies and he concisely reports that the non-recurring losses are sometimes linked to the increase of firm value. Hirchey and Richardson (2002, 2003) adopting the event study examines the stock price response to amortization of goodwill. They find significant negative returns after announcement and conclude that investors underreact to amortization of goodwill. This result seems to be against the market efficiency and it is possible that perception of inefficiency motivate to take a big bath. However, since the reason why investors cannot rationally react is not sufficiently examined in Hirchey and Richardson (2002, 2003), their results should be carefully interpreted.

The major concern in this paper is directed to the difference in the value relevance between the normal (small) loss and the large loss, which seems to be a product of big bath accounting. Some people may represent that a large loss does not decrease the firm value because it is just transitory and irrelevant and that such irrelevance becomes one of motives to take a big bath. However, the rational investors would negatively value the large loss that is opportunistically created by big bath accounting. In other words, we expect that a large loss is positively associated with stock price. It is common knowledge that normal loss is less value relevant than positive income and is sometimes irrelevant. Therefore, we concentrate on examining whether large loss is more value relevant than normal loss.

Similar to the previous sections, we mechanically identify the firms adopting big bath accounting based on the levels of operating profits, ordinary income, and net income and on the sign and magnitude of changes in them. The regression model with group dummies and the grouping criteria are as follows.

$$P_{it} = \alpha + \beta_1 NI_{it} + \beta_2 D_L NI_{it} + \beta_3 BB_k NI_{it} + \sum \gamma_j D_j + u_{it} \quad (10)$$

We try three dummies. $\boldsymbol{BB}_1$ is unity if ordinary income and net income are negative but net income is smaller than ordinary income, zero otherwise. The firm satisfying this condition reports the larger loss in the bottom line than negative ordinary income. $\boldsymbol{BB}_2$ is unity if the change in ordinary income and net income are negative but the change in net income is bigger than that of ordinary income, zero otherwise. The firm satisfying the second condition reports the negative level of net income and the larger negative change in net income than that in ordinary income though it faces the negative change in ordinary income. $\boldsymbol{BB}_3$ is unity if firms satisfy the second condition and the magnitude of changes in both ordinary income and net income are above the median in industry and year, zero otherwise. Since big bath accounting group is a part of loss reporting firms, the coefficient β_3 presents the difference in value relevance between normal loss and loss of big bath accounting.

5.2 Results of analysis

Table 6 summarizes the results. Panels A, B, C present the results of the first, second, and third

criterion, as explained above, respectively. The first accounting policy, which decreases the level of income, does not affect the value relevance of net income. On the other hand, both the second and third accounting policies have the peculiar effect on the value relevance of net income. In Panels B and C, the incremental coefficients on losses of big bath accounting (***BB***$_2$***NI*** and ***BB***$_3$***NI***) are significantly positive at the 0.10 level for the third period. In these Panels, the sum of the coefficient on net income and the incremental coefficient on normal loss ($\beta_1 + \beta_2$) is nearly equal to zero. That is, normal loss is not value relevant. On the other hand, the coefficients on loss of big bath accounting ($\beta_1 + \beta_2 + \beta_3$) for the third period is positive though it is smaller than that of positive net income. This means that loss of big bath accounting is value relevant and that the firm value decreases according to the magnitude of loss.

We can assume a few interpretations here, too; for instance, 1) the reported large losses correspond to the impairments of investment projects and then the future cash flows decrease, 2) firms bear the unnecessary costs because of nominal manipulation, 3) since investors can only uncertainly know the necessity of reporting a large loss, investors conservatively discount the firm value. However, which scenario is most persuasive is outside of this paper. We confirm that, based on the relationship between multi-step performance measures, *abnormal* or *unnatural* loss is value relevant and that the multi-step income statement is value relevant for exhibiting such an abnormal or unnatural state as demonstrated above.

6. Summary and conclusion

Reporting net income by the multi-step income statement has been accused of the ambiguity of classification for a long time. In the background, the opponents suspect that firms will manage multi-step performance measures (operating profits and ordinary income) by manipulating the classification. However, whether net income is chosen as a performance measure in the bottom line or not, if periodical performance is linked to the interests of managers, it is inevitable that managers endeavor to manage or manipulate performance on their preferences. Even if a single statement is mandated, only the manipulation of classification in the year becomes ineffective. The manipulation of allocation of income across years will not disappear.

As investigated in this paper, investors can detect the unusual or abnormal allocation patterns of ordinary income and net income, which have the different value relevance from normal ones, by using the multi-step performance information. The empirical evidence implies that current Japanese format of the income statement functions as a tool for screening earnings management samples. If execution costs and effects of manipulation on future cash flows differ according to the manipulated elements of net income, the variations of costs and effects should affect manager's decision making on the choice of means for earnings management. Moreover, it is expected that the disclosure of manager's decision reveal his or her prospect for future performance. In fact, the results in our research show the possibilities of such truth revealing.

However, our research provides no insight into the necessity to improve the current multi-step income statement in Japan, neither our research affirm the status quo. It is probable that the ambiguity of classification standard or rule makes income information much noisier and less useful and that the discretionary classification provides information rent for managers. The issues on the classification rule and on other problems contained in the current form remain for future investigation.

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Table 1 Sample distribution

Period I	1979	1980	1981	1982	1983	1984	1985	Subtotal
All	530	536	542	550	555	560	567	3,840
Manufacturing	303	304	307	310	313	316	317	2,170
Non-manufacturing	227	232	235	240	242	244	250	1,670
Period II	1986	1987	1988	1989	1990	1991	1992	Subtotal
All	573	576	604	645	764	876	941	4,579
Manufacturing	322	321	330	348	418	469	491	2,699
Non-manufacturing	251	255	274	297	346	407	450	2,280
Period III	1993	1994	1995	1996	1997	1998	1999	Subtotal
All	978	1,005	1,037	1,074	1,123	1,151	1,176	7,544
Manufacturing	502	508	517	521	541	547	558	3,694
Non-manufacturing	476	497	520	553	582	604	618	3,850
								Total
All								16,363
Manufacturing								8,563
Non-manufacturing								7,800

All our sample firms close fiscal year on March. Year 1979 presents “1978 fiscal year in Japan” that starts on April 1978 and ends March 1979.

Table 2 Descriptive statistics

Panel A: Stock price ***P***							
1979 – 85	Mean	St. Dev.	Min	1Q	Median	3Q	Max
All	521.489	822.099	62	218	313	526	14,500
Manufacturing	517.837	667.199	92	231	478	547	9,990
Non-manufacturing	526.234	987.709	62	205	280	490	14,500
1986 – 92							
All	1,333.269	1,705.121	124	630	930	1,460	33,700
Manufacturing	1,117.970	928.286	124	609	660	1,320	14,000
Non-manufacturing	1,588.575	2,282.787	132	669	1,010	1,650	33,700
1993 – 99							
All	2,238.765	29,632.825	45	405	639	1,100	1,150,000
Manufacturing	1,962.446	32,753.943	45	390	591	987	1,150,000
Non-manufacturing	2,503.888	26,289.429	58	425	691	1,210	704,000
1979 – 99							
All	1,560.234	20,158.516	45	370	640	1,100	1,150,000
Manufacturing	1,330.186	21,530.057	45	365	606	1,000	1,150,000
Non-manufacturing	1,812.785	18,533.029	58	375	686	1,220	704,000
Panel B: Ordinary Income ***OI***							
1979 – 85	Mean	St. Dev.	Min	1Q	Median	3Q	Max
All	46.696	83.397	- 640.000	13.059	29.911	55.781	1,155.556
Manufacturing	44.163	70.926	- 357.258	13.814	34.566	56.607	867.898
Non-manufacturing	49.987	97.142	- 640.000	12.198	29.755	54.858	1,155.556
1986 – 92							
All	62.344	89.454	- 604.492	20.985	41.633	74.269	1,651.003
Manufacturing	48.485	57.220	- 604.492	18.767	33.800	62.360	727.273
Non-manufacturing	78.768	114.486	- 337.289	25.218	51.124	94.304	1,651.003
1993 – 99							
All	115.994	1,721.548	- 19,566.434	11.874	32.573	73.943	70,699.000
Manufacturing	106.478	2,081.643	- 235.488	7.720	22.628	53.268	70,699.000
Non-manufacturing	125.124	1,284.344	- 19,566.434	17.342	44.964	91.715	32,231.250
1979 – 99							
All	83.407	1,171.070	- 19,566.434	14.623	34.897	69.663	70,699.000
Manufacturing	72.408	1,368.396	- 604.492	12.393	29.009	57.457	70,699.000
Non-manufacturing	95.482	906.093	- 19,566.434	17.928	42.106	85.059	32,231.250

Table 2 Descriptive statistics (*continued*)

Panel C: Net Income ***NI***							
1979 – 85	Mean	St. Dev.	Min	1Q	Median	3Q	Max
All	21.446	42.070	- 549.000	6.454	14.004	26.170	601.852
Manufacturing	21.044	36.011	- 370.290	7.197	16.567	27.338	382.328
Non-manufacturing	21.968	48.827	- 549.000	5.912	12.586	24.372	601.852
1986 – 92							
All	31.686	165.486	- 965.592	9.691	19.481	36.145	11,215.455
Manufacturing	23.934	36.434	- 965.592	9.157	17.731	30.698	468.775
Non-manufacturing	40.871	241.045	- 330.885	10.317	22.089	43.241	11,215.455
1993 – 99							
All	45.070	958.332	- 33,262.238	4.572	13.283	33.970	39,769.500
Manufacturing	51.366	1,120.986	- 549.230	3.116	10.492	25.268	39,769.500
Non-manufacturing	39.030	770.597	- 33,262.238	5.898	17.606	41.483	14,444.500
1979 – 99							
All	35.454	657.465	- 33,262.238	6.422	15.553	32.468	39,769.500
Manufacturing	35.035	736.913	- 965.592	6.092	14.041	27.999	39,769.500
Non-manufacturing	35.913	557.354	- 33,262.238	6.728	17.501	38.766	14,444.500

Ordinary income is measured by adding gains and losses (including interest expenses) from non-core operating and financing activities to operating profits form core operating activity. Net income is measured by adding non-recurring components such as special items and extraordinary items, and taxes to ordinary income.

Table 3 Value relevance of performance for income smoothing firms (1)

Panel A	***OI***			***SM_{11} OI***			***SM_{12} OI***			***SM_{13} OI***			
	Coeff.	T-value	*p*-value	Coeff.	T-value	*p*-value	Coeff.	T-value	*p*-value	Coeff.	T-value	*p*-value	Adj. R^2
All													
1979 – 85	0.984	5.13	0.002	- 0.942	- 4.03	0.007	- 0.730	- 4.07	0.007	- 1.018	- 7.14	0.000	0.215
1986 – 92	2.543	3.58	0.012	- 1.564	- 2.92	0.027	- 0.616	- 2.07	0.084	- 1.522	- 4.41	0.005	0.225
1993 – 99	1.742	6.52	0.001	- 0.746	- 5.14	0.002	- 0.976	- 7.14	0.000	- 1.330	- 7.95	0.000	0.192
1979 – 99	1.756	8.10	0.000	- 1.084	- 5.89	0.000	- 0.774	- 6.48	0.000	- 1.290	- 10.23	0.000	0.211
Manufacturing													
1979 – 85	1.341	6.71	0.001	- 1.427	- 3.82	0.009	- 0.862	- 3.86	0.008	- 1.369	- 8.35	0.000	0.231
1986 – 92	2.577	4.20	0.006	- 2.170	- 4.10	0.006	- 0.795	- 3.08	0.022	- 1.894	- 5.25	0.002	0.175
1993 – 99	1.875	5.62	0.001	- 0.705	- 2.43	0.051	- 0.671	- 1.94	0.101	- 1.479	- 5.94	0.001	0.204
1979 – 99	1.931	9.33	0.000	- 1.434	- 5.64	0.000	- 0.776	- 4.56	0.000	- 1.580	- 11.32	0.000	0.203
Non-manufacturing													
1979 – 85	0.688	2.87	0.028	- 0.604	- 3.33	0.016	- 0.499	- 2.32	0.059	- 0.839	- 5.53	0.001	0.190
1986 – 92	2.648	3.27	0.017	- 1.047	- 2.74	0.034	- 0.482	- 0.91	0.400	- 1.121	- 3.35	0.015	0.213
1993 – 99	1.655	8.01	0.000	- 0.800	- 5.45	0.002	- 0.916	- 4.46	0.004	- 1.329	- 9.33	0.000	0.171
1979 – 99	1.664	6.87	0.000	- 0.817	- 6.09	0.000	- 0.632	- 4.04	0.001	- 1.097	- 8.26	0.000	0.191

Table 3 Value relevance of performance for income smoothing firms (1) (*continued*)

Panel B	***NI***			***SM_{21} NI***			***SM_{22} NI***			***SM_{23} NI***			
	Coeff.	T-value	*p*-value	Coeff.	T-value	*p*-value	Coeff.	T-value	*p*-value	Coeff.	T-value	*p*-value	Adj. R^2
All													
1979 – 85	1.212	4.73	0.003	- 0.635	- 1.84	0.115	- 1.144	- 2.91	0.027	- 1.407	- 4.65	0.004	0.198
1986 – 92	3.414	3.46	0.014	- 0.998	- 1.72	0.137	- 2.030	- 1.99	0.093	- 2.316	- 2.72	0.035	0.209
1993 – 99	2.055	7.00	0.000	- 1.725	- 5.49	0.002	- 1.392	- 4.31	0.005	- 1.697	- 7.32	0.000	0.155
1979 – 99	2.227	8.35	0.000	- 1.119	- 4.49	0.000	- 1.522	- 4.90	0.000	- 1.807	- 7.63	0.000	0.188
Manufacturing													
1979 – 85	1.298	4.76	0.003	- 0.610	- 1.35	0.225	- 1.473	- 3.45	0.014	- 1.331	- 4.05	0.007	0.203
1986 – 92	4.437	6.28	0.001	- 1.917	- 2.47	0.049	- 3.365	- 3.65	0.011	- 3.366	- 5.67	0.001	0.171
1993 – 99	2.464	7.12	0.000	- 1.236	- 2.45	0.050	- 1.746	- 3.63	0.011	- 1.766	- 4.60	0.004	0.182
1979 – 99	2.733	10.66	0.000	- 1.254	- 3.51	0.002	- 2.194	- 6.29	0.000	- 2.154	- 8.39	0.000	0.185
Non-manufacturing													
1979 – 85	1.185	2.77	0.032	- 0.662	- 1.92	0.103	- 1.168	- 3.06	0.022	- 1.948	- 9.82	0.000	0.192
1986 – 92	2.686	2.26	0.064	- 0.275	- 0.79	0.459	- 0.899	- 1.49	0.186	- 1.386	- 1.55	0.171	0.187
1993 – 99	1.883	4.30	0.005	- 1.353	- 2.90	0.027	- 0.965	- 2.31	0.060	- 1.664	- 4.52	0.004	0.131
1979 – 99	1.918	5.38	0.000	- 0.764	- 3.30	0.004	- 1.010	- 3.79	0.001	- 1.666	- 6.18	0.000	0.170

Table 3 Value relevance of performance for income smoothing firms (1) (*continued*)

Panel C	***NI***			SM_{31} ***NI***			SM_{32} ***NI***			SM_{33} ***NI***			
	Coeff.	T-value	*p*-value	Coeff.	T-value	*p*-value	Coeff.	T-value	*p*-value	Coeff.	T-value	*p*-value	Adj. R^2
All													
1979 – 85	1.089	4.74	0.003	0.532	1.20	0.274	- 0.987	- 1.96	0.097	- 1.209	- 3.55	0.012	0.198
1986 – 92	2.979	3.37	0.015	0.022	0.34	0.745	- 1.416	- 2.33	0.058	- 1.853	- 5.84	0.001	0.199
1993 – 99	0.935	6.43	0.001	0.626	2.06	0.085	- 0.507	- 1.03	0.341	- 0.598	- 1.73	0.134	0.141
1979 – 99	1.668	7.98	0.000	0.393	1.91	0.070	- 0.970	- 3.19	0.005	- 1.220	- 5.28	0.000	0.179
Manufacturing													
1979 – 85	1.254	4.76	0.003	- 0.333	- 0.68	0.524	- 1.493	- 2.95	0.026	- 1.264	- 3.89	0.008	0.200
1986 – 92	3.616	6.29	0.001	- 1.067	- 1.13	0.303	- 2.302	- 3.03	0.023	- 2.641	- 5.99	0.001	0.155
1993 – 99	1.788	5.88	0.001	- 0.323	- 1.54	0.175	- 1.257	- 2.52	0.045	- 1.107	- 2.73	0.034	0.171
1979 – 99	2.219	10.01	0.000	- 0.574	- 1.97	0.063	- 1.684	- 5.03	0.000	- 1.671	- 6.75	0.000	0.175
Non-manufacturing													
1979 – 85	0.195	1.94	0.101	1.504	3.78	0.009	- 0.207	- 0.47	0.653	- 0.969	- 1.87	0.111	0.202
1986 – 92	1.627	1.50	0.185	1.480	2.51	0.046	0.113	- 0.91	0.396	- 0.289	- 0.44	0.672	0.189
1993 – 99	0.697	4.19	0.006	1.318	2.89	0.028	0.002	0.31	0.766	- 0.488	- 0.77	0.472	0.131
1979 – 99	0.840	3.72	0.001	1.434	5.22	0.000	- 0.030	- 0.84	0.411	- 0.582	- 1.87	0.076	0.174

Regression Models:

$$P_{it} = \alpha + \beta_1 OI_{it} + \beta_2 SM_{11} OI_{it} + \beta_3 SM_{12} OI_{it} + \beta_4 SM_{13} OI_{it} + \sum \gamma_j D_j + u_{it} \quad (1)$$

$$P_{it} = \alpha + \beta_1 NI_{it} + \beta_2 SM_{21} NI_{it} + \beta_3 SM_{22} NI_{it} + \beta_4 SM_{23} NI_{it} + \sum \gamma_j D_j + u_{it} \quad (2)$$

$$P_{it} = \alpha + \beta_1 NI_{it} + \beta_2 SM_{31} NI_{it} + \beta_3 SM_{32} NI_{it} + \beta_4 SM_{33} NI_{it} + \sum \gamma_j D_j + u_{it} \quad (3)$$

$\boldsymbol{D_j}$s are industry dummies. In equation (1), $\boldsymbol{SM_{11}}$ is unity if $\boldsymbol{\Delta OI}$ is negative while $\boldsymbol{\Delta OP}$ is positive, zero otherwise. $\boldsymbol{SM_{12}}$ is unity if $\boldsymbol{\Delta OI}$ is positive while $\boldsymbol{\Delta OP}$ is negative, zero otherwise. $\boldsymbol{SM_{13}}$ is unity if both $\boldsymbol{\Delta OP}$ and $\boldsymbol{\Delta OI}$ are negative, zero otherwise. In equation (2), $\boldsymbol{SM_{21}}$ is unity if $\boldsymbol{\Delta NI}$ is negative while $\boldsymbol{\Delta OI}$ is positive, zero otherwise. $\boldsymbol{SM_{22}}$ is unity if $\boldsymbol{\Delta NI}$ is positive while $\boldsymbol{\Delta OI}$ is negative, zero otherwise. $\boldsymbol{SM_{23}}$ is unity if both $\boldsymbol{\Delta OI}$ and $\boldsymbol{\Delta NI}$ are negative, zero otherwise. In equation (3), $\boldsymbol{SM_{31}}$ is unity if $\boldsymbol{\Delta NI}$ is negative while both $\boldsymbol{\Delta OP}$ and $\boldsymbol{\Delta OI}$ are positive, zero otherwise. $\boldsymbol{SM_{32}}$ is unity if $\boldsymbol{\Delta NI}$ is positive while both $\boldsymbol{\Delta OP}$ and $\boldsymbol{\Delta OI}$ are negative, zero otherwise. $\boldsymbol{SM_{33}}$ is unity if all of $\boldsymbol{\Delta OP}$, $\boldsymbol{\Delta OI}$, $\boldsymbol{\Delta NI}$ are negative, zero otherwise. The definitions of variables are provided in Table 2 other than ***OP***, which represents operating profits from core operating activity.

Table 4 Value relevance of performance for income smoothing firms (2)

Panel A	***OI***			***DN*** $_1$ ***OI***			***UP*** $_1$ ***OI***			
	Coefficient	T-value	*p*-value	Coefficient	T-value	*p*-value	Coefficient	T-value	*p*-value	Adj. R^2
All										
1979 – 85	0.420	5.61	0.001	- 0.061	- 0.46	0.664	- 0.452	- 2.76	0.033	0.175
1986 – 92	2.028	3.30	0.016	0.561	1.25	0.258	- 1.363	- 4.07	0.007	0.209
1993 – 99	0.963	7.44	0.000	0.679	3.94	0.008	- 0.439	- 1.95	0.100	0.155
1979 – 99	1.137	7.21	0.000	0.393	1.87	0.077	- 0.751	- 4.95	0.000	0.180
Manufacturing										
1979 – 85	0.648	4.49	0.004	- 0.174	- 0.52	0.624	- 0.871	- 2.97	0.025	0.1846
1986 – 92	1.788	3.47	0.013	0.444	1.23	0.263	- 1.383	- 2.64	0.039	0.1562
1993 – 99	1.113	5.83	0.001	0.895	2.73	0.034	- 1.065	- 2.89	0.028	0.1781
1979 – 99	1.183	7.55	0.000	0.388	1.79	0.089	- 1.106	- 5.09	0.000	0.1729
Non-manufacturing										
1979 – 85	0.252	2.13	0.077	0.020	- 0.54	0.612	- 0.283	- 1.65	0.151	0.143
1986 – 92	2.515	3.50	0.013	0.359	0.50	0.635	- 1.643	- 3.71	0.010	0.209
1993 – 99	0.868	6.05	0.001	0.818	2.35	0.057	- 0.256	- 1.27	0.250	0.123
1979 – 99	1.212	5.80	0.000	0.399	0.90	0.379	- 0.727	- 3.50	0.002	0.159

Table 4 Value relevance of performance for income smoothing firms (2) (*continued*)

Panel B	***NI***			***DN*** $_2$***NI***			***UP*** $_2$***NI***			
	Coefficient	T-value	*p*-value	Coefficient	T-value	*p*-value	Coefficient	T-value	*p*-value	Adj. R^2
All										
1979 – 85	0.411	5.38	0.002	0.880	3.04	0.023	- 1.790	- 2.29	0.062	0.167
1986 – 92	1.971	3.25	0.018	0.856	1.35	0.226	- 1.006	- 1.85	0.114	0.180
1993 – 99	0.598	9.20	0.000	3.384	9.52	0.000	- 0.436	- 1.25	0.258	0.138
1979 – 99	1.059	7.32	0.000	1.586	4.68	0.000	- 1.104	- 3.28	0.004	0.164
Manufacturing										
1979 – 85	0.626	4.25	0.005	1.180	2.73	0.034	- 1.792	- 2.47	0.049	0.170
1986 – 92	2.307	4.67	0.003	2.753	2.32	0.060	- 1.775	- 1.50	0.184	0.147
1993 – 99	0.914	9.87	0.000	3.498	4.46	0.004	- 1.464	- 2.34	0.058	0.165
1979 – 99	1.282	9.17	0.000	2.477	5.13	0.000	- 1.677	- 3.77	0.001	0.161
Non-manufacturing										
1979 – 85	0.175	1.80	0.122	0.601	1.85	0.113	- 1.987	- 1.74	0.133	0.148
1986 – 92	1.792	2.06	0.085	0.322	0.63	0.552	- 1.057	- 1.75	0.130	0.166
1993 – 99	0.473	8.89	0.000	3.178	10.85	0.000	- 0.332	- 1.12	0.305	0.103
1979 – 99	0.814	4.93	0.000	1.367	3.85	0.001	- 1.125	- 2.70	0.014	0.139

Regression Models:

$$P_{it} = \alpha + \beta_1 OI_{it} + \beta_2 DN_1 OI_{it} + \beta_3 UP_1 OI_{it} + \sum \gamma_j D_j + u_{it} \quad (4)$$

$$P_{it} = \alpha + \beta_1 NI_{it} + \beta_2 DN_2 NI_{it} + \beta_3 UP_2 NI_{it} + \sum \gamma_j D_j + u_{it} \quad (5)$$

$\boldsymbol{DN}_1$ is unity if, while the *positive* change in operating profits is above the median, the change in ordinary income is less than the median, zero otherwise, and $\boldsymbol{UP}_1$ is unity, in reverse, if the *negative* change in operating profits is above the median while the change in ordinary income is less than the median. $\boldsymbol{DN}_2$ is unity if, while the *positive* change in ordinary income is above the median, the change in net income is less than the median, zero otherwise, and $\boldsymbol{UP}_2$ is unity, in reverse, if the *negative* change in ordinary income is above the median while the change in net income is less than the median.

Table 5 Value relevance of performance for loss avoiding firms

Panel A	***OI***			***$D_{L1}OI$***			***U_1OI***			
	Coefficient	T-value	*p*-value	Coefficient	T-value	*p*-value	Coefficient	T-value	*p*-value	Adj. R^2
All										
1979 – 85	0.840	4.53	0.004	- 0.758	- 3.23	0.018	- 1.338	- 1.34	0.250	0.193
1986 – 92	2.514	3.06	0.022	- 3.708	- 3.03	0.023	1.946	- 1.41	0.209	0.219
1993 – 99	1.422	4.43	0.004	- 1.060	- 3.52	0.013	- 1.435	- 2.10	0.081	0.167
1979 – 99	1.592	6.38	0.000	- 1.842	- 5.88	0.000	- 0.164	- 2.93	0.009	0.193
Manufacturing										
1979 – 85	1.150	5.63	0.001	- 1.085	- 3.55	0.012	- 4.851	- 1.02	0.367	0.2091
1986 – 92	2.676	3.28	0.017	- 3.910	- 3.40	0.014	7.201	0.08	0.940	0.1794
1993 – 99	1.834	3.72	0.010	- 1.361	- 2.47	0.048	- 0.858	- 1.99	0.094	0.1978
1979 – 99	1.887	6.50	0.000	- 2.119	- 5.48	0.000	1.060	- 1.58	0.132	0.1954
Non-manufacturing										
1979 – 85	0.619	2.31	0.060	- 0.849	- 2.51	0.046	- 11.681	- 1.99	0.141	0.165
1986 – 92	2.612	3.21	0.018	- 8.426	- 1.26	0.253	- 3.040	- 1.96	0.098	0.212
1993 – 99	1.245	5.17	0.002	- 0.905	- 2.95	0.026	- 0.351	- 0.59	0.576	0.136
1979 – 99	1.492	5.70	0.000	- 3.393	- 3.85	0.001	- 3.914	- 2.04	0.057	0.171

Table 5 Value relevance of performance for loss avoiding firms (*continued*)

Panel B	***NI***			***$D_{L2}NI$***			***U_2NI***			
	Coefficient	T-value	*p*-value	Coefficient	T-value	*p*-value	Coefficient	T-value	*p*-value	Adj. R^2
All										
1979 – 85	0.997	4.14	0.006	- 0.783	- 2.25	0.066	- 1.035	- 2.31	0.060	0.181
1986 – 92	3.282	3.09	0.021	- 4.541	- 2.65	0.038	- 1.003	- 2.23	0.067	0.196
1993 – 99	0.954	7.46	0.000	- 0.501	- 2.23	0.068	- 0.292	- 1.76	0.129	0.130
1979 – 99	1.745	7.19	0.000	- 1.942	- 4.13	0.001	- 0.777	- 3.75	0.001	0.169
Manufacturing										
1979 – 85	1.318	4.75	0.003	- 0.704	- 2.66	0.037	- 1.176	- 1.76	0.129	0.193
1986 – 92	4.212	3.80	0.009	- 5.242	- 2.73	0.034	- 1.417	- 2.39	0.054	0.162
1993 – 99	1.714	5.51	0.002	- 0.975	- 2.00	0.093	- 1.059	- 2.02	0.090	0.164
1979 – 99	2.415	8.20	0.000	- 2.307	- 4.40	0.000	- 1.217	- 3.62	0.002	0.173
Non-manufacturing										
1979 – 85	0.627	1.46	0.195	- 1.022	- 2.45	0.050	- 0.297	- 0.70	0.511	0.164
1986 – 92	2.449	2.32	0.059	- 9.195	- 1.47	0.192	73.483	0.50	0.639	0.172
1993 – 99	0.770	9.54	0.000	- 0.499	- 2.45	0.050	- 0.837	- 0.84	0.432	0.095
1979 – 99	1.282	4.81	0.000	- 3.572	- 3.07	0.006	21.648	- 0.36	0.723	0.144

Table 5 Value relevance of performance for loss avoiding firms (*continued*)

Panel C	***NI***			***$D_{L3}NI$***			***U_3NI***			
	Coefficient	T-value	*p*-value	Coefficient	T-value	*p*-value	Coefficient	T-value	*p*-value	Adj. R^2
All										
1979 – 85	0.882	4.12	0.006	- 0.715	- 1.16	0.292	4.911	- 0.75	0.479	0.178
1986 – 92	3.135	3.45	0.014	- 4.339	- 2.23	0.067	- 1.585	- 3.07	0.028	0.195
1993 – 99	0.721	8.27	0.000	- 0.160	- 0.30	0.776	- 0.243	- 1.66	0.148	0.128
1979 – 99	1.579	7.83	0.000	- 1.738	- 2.23	0.037	1.158	- 3.03	0.007	0.167
Manufacturing										
1979 – 85	1.037	4.16	0.006	- 0.746	- 1.98	0.095	2.697	- 0.42	0.688	0.187
1986 – 92	3.810	4.13	0.006	- 4.921	- 2.43	0.051	- 0.501	- 2.16	0.083	0.156
1993 – 99	1.406	8.31	0.000	- 0.640	- 1.95	0.099	- 0.772	- 2.43	0.051	0.160
1979 – 99	2.084	8.85	0.000	- 2.102	- 3.78	0.001	0.523	- 2.27	0.035	0.168
Non-manufacturing										
1979 – 85	0.602	1.76	0.129	- 2.914	- 2.25	0.066	5.627	0.45	0.695	0.167
1986 – 92	2.179	2.25	0.066	- 31.341	- 1.24	0.260	271.796	1.11	0.384	0.178
1993 – 99	0.558	8.38	0.000	- 0.002	0.08	0.941	- 9.663	- 2.09	0.105	0.096
1979 – 99	1.113	4.98	0.000	- 11.419	- 1.71	0.103	71.269	0.76	0.468	0.147

Regression Models:

$$P_{it} = \alpha + \beta_1 OI_{it} + \beta_2 D_{L1} OI_{it} + \beta_3 U_1 OI_{it} + \sum \gamma_j D_j + u_{it} \quad (7)$$

$$P_{it} = \alpha + \beta_1 NI_{it} + \beta_2 D_{L2} NI_{it} + \beta_3 U_2 NI_{it} + \sum \gamma_j D_j + u_{it} \quad (8)$$

$$P_{it} = \alpha + \beta_1 NI_{it} + \beta_2 D_{L3} NI_{it} + \beta_3 U_3 NI_{it} + \sum \gamma_j D_j + u_{it} \quad (9)$$

In equation (7), $\boldsymbol{D}_{L1}$ is unity if both operating profits and ordinary income are negative, zero otherwise. $\boldsymbol{U}_1$ is unity if ordinary income is positive while operating profits is negative, zero otherwise. In equation (8), $\boldsymbol{D}_{L2}$ is unity if both ordinary income and net income are negative, zero otherwise. $\boldsymbol{U}_2$ is unity if net income is positive while ordinary income is negative, zero otherwise. In equation (9), $\boldsymbol{D}_{L3}$ is unity if both operating profits and net income are negative, zero otherwise. $\boldsymbol{U}_3$ is unity if net income is positive while operating profits is negative, zero otherwise.

Table 6 Value relevance of performance for firms taking a big bath

Panel A	***NI***			***D_L NI***			***BB_1 NI***			
	Coefficient	T-value	*p*-value	Coefficient	T-value	*p*-value	Coefficient	T-value	*p*-value	Adj. R^2
All										
1979 – 85	1.020	4.32	0.005	- 0.771	- 2.45	0.050	- 0.005	0.40	0.701	0.181
1986 – 92	3.065	2.67	0.037	- 9.135	- 1.16	0.288	4.737	0.06	0.958	0.195
1993 – 99	1.859	3.67	0.010	- 1.488	- 2.67	0.037	- 0.048	0.21	0.844	0.147
1979 – 99	1.981	6.06	0.000	- 3.798	- 3.50	0.002	1.562	0.31	0.757	0.174
Manufacturing										
1979 – 85	1.297	4.81	0.003	- 1.604	- 3.98	0.007	0.588	1.93	0.101	0.189
1986 – 92	4.118	3.48	0.013	- 10.626	- 2.08	0.083	5.686	0.85	0.426	0.160
1993 – 99	2.167	2.98	0.025	- 1.564	- 1.99	0.094	- 0.234	0.38	0.719	0.175
1979 – 99	2.527	6.55	0.000	- 4.598	- 4.15	0.001	2.013	1.44	0.164	0.175
Non-manufacturing										
1979 – 85	0.744	1.96	0.097	- 0.508	- 1.76	0.129	- 3.094	- 1.51	0.191	0.168
1986 – 92	2.297	2.20	0.070	- 10.717	- 0.07	0.950	1.189	- 0.37	0.722	0.169
1993 – 99	1.780	5.04	0.002	- 1.480	- 3.63	0.011	0.023	0.20	0.851	0.111
1979 – 99	1.607	4.93	0.000	- 4.235	- 2.70	0.014	- 0.504	- 1.21	0.242	0.149

Table 6 Value relevance of performance for firms taking a big bath (*continued*)

Panel B	***NI***			***D_LNI***			***BB_2NI***			
	Coefficient	T-value	*p*-value	Coefficient	T-value	*p*-value	Coefficient	T-value	*p*-value	Adj. R^2
All										
1979 – 85	1.039	4.25	0.005	- 0.671	- 1.66	0.147	- 0.265	- 1.36	0.223	0.190
1986 – 92	3.056	2.62	0.039	- 3.777	- 1.37	0.221	- 4.473	- 1.33	0.232	0.194
1993 – 99	1.876	3.68	0.010	- 1.730	- 3.05	0.023	0.338	3.21	0.018	0.148
1979 – 99	1.990	6.06	0.000	- 2.059	- 3.44	0.003	- 1.467	- 0.02	0.981	0.177
Manufacturing										
1979 – 85	1.274	4.71	0.003	- 0.568	- 0.98	0.367	- 0.677	- 1.05	0.335	0.192
1986 – 92	4.100	3.47	0.013	- 4.366	- 1.76	0.128	- 5.303	- 1.88	0.109	0.158
1993 – 99	2.184	3.02	0.024	- 1.789	- 2.40	0.053	0.393	2.06	0.085	0.177
1979 – 99	2.519	6.53	0.000	- 2.241	- 3.03	0.007	- 1.863	- 0.51	0.616	0.176
Non-manufacturing										
1979 – 85	0.788	2.06	0.085	- 1.111	- 6.54	0.001	- 0.331	- 1.17	0.294	0.152
1986 – 92	2.251	2.20	0.070	- 7.934	- 0.78	0.465	2.469	0.05	0.961	0.172
1993 – 99	1.809	4.36	0.005	- 1.792	- 4.14	0.006	0.318	2.46	0.049	0.112
1979 – 99	1.616	4.79	0.000	- 3.613	- 3.15	0.005	0.792	0.21	0.839	0.145

Table 6 Value relevance of performance for firms taking a big bath (*continued*)

Panel C	***NI***			***D_LNI***			***BB_3NI***			
	Coefficient	T-value	*p*-value	Coefficient	T-value	*p*-value	Coefficient	T-value	*p*-value	Adj. R^2
All										
1979 – 85	1.023	4.12	0.006	- 0.724	- 2.16	0.074	- 0.410	- 1.28	0.249	0.184
1986 – 92	3.062	2.67	0.037	- 3.784	- 1.14	0.298	- 4.783	- 2.40	0.053	0.195
1993 – 99	1.886	3.70	0.010	- 1.739	- 3.12	0.021	0.357	2.34	0.058	0.149
1979 – 99	1.991	6.06	0.000	- 2.082	- 3.51	0.002	- 1.612	- 0.46	0.650	0.176
Manufacturing										
1979 – 85	1.275	4.74	0.003	- 0.664	- 1.42	0.205	- 0.513	- 0.68	0.524	0.191
1986 – 92	4.091	3.46	0.014	- 4.321	- 1.74	0.133	- 5.253	- 1.43	0.203	0.159
1993 – 99	2.188	3.02	0.023	- 1.799	- 2.38	0.055	0.445	3.99	0.007	0.176
1979 – 99	2.518	6.55	0.000	- 2.261	- 3.28	0.004	- 1.774	0.05	0.958	0.175
Non-manufacturing										
1979 – 85	0.741	1.99	0.093	- 1.085	- 4.67	0.003	- 0.702	- 1.00	0.390	0.156
1986 – 92	2.295	2.26	0.064	- 7.753	- 0.61	0.564	- 0.538	- 0.79	0.487	0.172
1993 – 99	1.828	4.44	0.004	- 1.818	- 4.25	0.005	0.448	2.27	0.064	0.112
1979 – 99	1.621	4.80	0.000	- 3.552	- 3.03	0.007	- 0.122	- 0.80	0.439	0.147

Regression Model:

$$P_{it} = \alpha + \beta_1 NI_{it} + \beta_2 D_L NI_{it} + \beta_3 BB_k NI_{it} + \sum \gamma_j D_j + u_{it} \qquad (10)$$

BB_1 is unity if ordinary income is negative and net income is smaller than ordinary income, zero otherwise. ***BB_2*** is unity if the change in ordinary income is negative and the change in net income is smaller than that of ordinary income and the level of net income is negative, zero otherwise. ***BB_3*** is unity if firms satisfy the condition of ***BB_2*** and the magnitude of changes in both ordinary income and net income are above the median in industry and year, zero otherwise.